

## 2<sup>nd</sup> Phase Radium Samples

### Monitoring Well Sampling

Attached are the proposed list of wells around GM-15S and Bethpage Water District Plant 4. Prior to sampling, depth to water will be measured at each well. All wells will then be purged and sampled using a submersible pump, or an alternative method, depending on the observed depth to groundwater and logistical issues. Purging and sampling will be performed consistent with USEPA low-flow sampling requirements. Field parameters (i.e., pH, dissolved oxygen, etc. as described in the USEPA low-flow sampling requirements) will be collected using a water quality meter with flow-through cell until parameters stabilized before samples are collected.

Samples will be analyzed for Radium 226/228, Isotopic Uranium and Isotopic Thorium. For this effort, Gross Alpha and Gross Beta analysis are not recommended as these are normally utilized as screening methods used as potential triggers for the need for the above analysis and are not reliable sources of information compared to isotopic results.

Wells to be sampled for Radiological Parameters:

GM-15S

Upgradient from GM-15

HN-40 S,I (Navy OU2)

TT-304 S,I,D (Navy OU2)

TT-307 S,I,D (Navy OU2)

MW-107-1 (Northrop Grumman OU3)

Side gradient from GM-15

GM-19 S,I (Northrop Grumman OU2)

GM-74 I,D, D2 (Northrop Grumman OU2)

MW-109-3 (Northrop Grumman OU3)

MW-111-4 (Northrop Grumman OU3)

Dowgradient from GM-15

Well 19 (Northrop Grumman OU2)

GM-37 D, D2 (Northrop Grumman OU2)

GM-79 I,D (Navy OU2)

GM-71D2 (Navy OU2)

MW-7 (Northrop Grumman OU3)

### **Analytical Laboratory**

All groundwater samples collected will be submitted to Lab (state contract lab), located in. Lab is a NYSDOH ELAP certified laboratory meeting specifications for documentation, reduction and reporting.

### **Reporting Limit**

For the well sampling effort at the NG site, here are the proposed analysis methods and reporting limits (RL).

- Isotopic Uranium : DOE HASL-300 U-02 RL = 0.5 pCi/L
- Isotopic Thorium : DOE HASL-300 Th-01 RL = 0.5 pCi/L
- Radium-226 : EPA Method 903.1 RL = 1.0 pCi/L
- Radium-228: EPA Method 904.0 RL = 1.0 pCi/L

### **Sample Handling and Analysis**

To ensure quality data acquisition and collection of representative samples, there are selective procedures to minimize sample degradation or contamination. These include procedures for preservation of the samples as well as sampling packaging and shipping procedures.

### **Field Sample Handling**

The types of containers, volumes needed, and preservation techniques for the aforementioned testing parameters are presented in Table 1.

### **Sample Custody Documentation**

The purpose of documenting sample custody is to confirm that the integrity and handling of the samples is not subject to question. Sample custody will be maintained from the point of sampling through the analysis.

Each individual collecting samples is personally responsible for the care and custody of the samples. All sample labels will be pre-printed or filled out using waterproof ink. The technical staff will review all field activities with the Field Team Leader to determine whether proper custody procedures were followed during the fieldwork and to decide if additional samples are required.

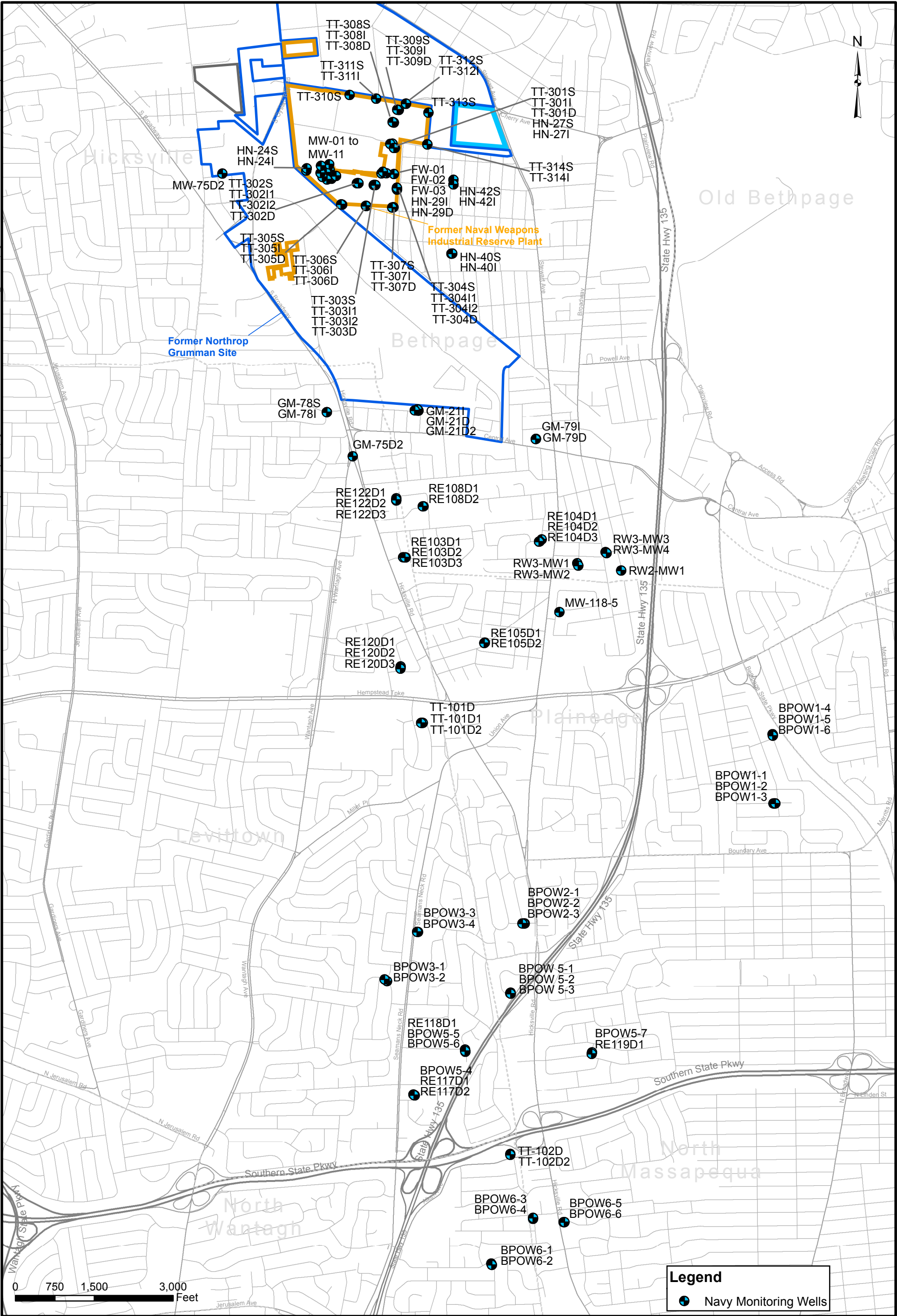
All samples being shipped off-site for analysis must be accompanied by a properly completed chain of custody form (provided by the State contract Lab). The sample numbers will be listed on the chain of custody form. When transferring the possession of samples, individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of samples from the sampler to another person, to/from a secure storage area, and to the laboratory.

Samples will be packaged for laboratory pick up and/or shipment with a separate signed custody record enclosed in each sample box or cooler. Shipping containers will be locked and/or secured with strapping tape in at least two locations for shipment to the laboratory.

## **Sample Shipment**

Sample packaging and shipping procedures are based upon USEPA specifications, as well as U.S. Department of Transportation (DOT) regulations. The procedures vary according to potential sample analytes, concentration, and matrix, and are designed to provide optimum protection for the samples and the public.

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WELL LOCATION MAP

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT

BETHPAGE, NEW YORK

**Legend**

● Navy Monitoring Wells

CONTRACT NUMBER		CTO NUMBER	
N62470-11-D8013		WE08	
APPROVED BY		DATE	
EV		10/7/2015	
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